

# Catalyzing Health Equity through Design: A Place-Based Approach to Community Revitalization

PEGAH ZAMANI

Kennesaw State University

CATHERINE MERCIER-BAGGETT

City of Sandy Springs

**Keywords:** health equity, environmental pollution, disadvantaged community, cross-sector collaboration, sustainable development

**To advance public health, equity and sustainability in a marginalized community, what role can the partnership among academia, local government and practice play? In what ways can we integrate an impactful community engagement into the design curriculum? Such notion of engaged scholarship is inquired in the latest collaborative project of our research lab on *Design for Health: Advancing Built Environment Performance through Equitable, Ecological and Sustainable Developments*. In partnership with the City of Sandy Springs, GA, a team of undergraduate architecture students at Kennesaw State University mapped the health equity within the built setting of a disadvantaged community in Sandy Springs that is challenged by air quality, flooding, lack of walkability and an overall low quality of public life. Composed mostly of low and moderate-income LatinX families, the neighborhood is home to approximately 1,600 multifamily units, mostly rental. To avoid the displacement of vulnerable residents in a challenging housing market, the lab aimed at enhancing the existing assets through proposed high-impact sustainable design strategies such as improving connectivity and accessibility to nature thus increasing social cohesion and prioritizing the residents' well-being. The interdisciplinary research team sought means to create healthier, more equitable and ecologically balanced built environments by providing design solutions to address climate-related impacts, improve the quality of life at a low cost to landlords and to naturally stabilize rental rates, catalyzing the intersections among ecological and socio-economic aspects of the community. This project is strategized as a first phase and envisions a holistic model to further engage the community, nonprofit organizations and property owners, to generate tangible results. As long-term outcomes, the team seeks to develop sustainable innovative design solutions and actions addressing environmental vulnerabilities and fostering climate resilience through enforcement of environmental regulations and policy-making.**

## THE ACADEMIC FRAMEWORK

In the spring semester of 2021, a team of undergraduate students at the Department of Architecture at Kennesaw State University (KSU) focused on resilient, healthy, and equitable communities in an intensive three-credit elective course: *Design for Health: Advancing Built Environment Performance through Equitable, Ecological and Sustainable Developments*. This was the first course in the college specifically devoted to the interconnection between health equity and the built environment design.

The KSU Office of Government Relations offered outreach support to establish and strengthen the relationship between the lab and the City of Sandy Springs in an effort to benefit both the students and community, under the umbrella of a 2020 Master Agreement between the City and KSU that sets forth a partnership for creative applied research, making Sandy Springs an "urban laboratory". One of the main pedagogical goals of this project is to apply - creatively and critically - an academic framework of analysis to a real-life case study, engaging students with City staff to research empowering strategies for marginalized communities.

During the earlier phase of the semester, parallel to on-site observations and data mapping, the students conducted a literature review of evolving research on the links between public health and the built environment. Based on over 50 precedent studies, the team developed a matrix that lays out standards for dissecting a community's wellbeing structure. The matrix intersected measurable standards of different rating systems to human health, energy, food, and various environmental factors (including air quality, and daylight). Due to the early developmental stage of the recommendations, this paper reports the work completed on the ecological environment, only one of the four thematic lenses focused on the site during the semester.

## THE CROSSROADS' CHARACTERISTICS

The City of Sandy Springs is situated north of Atlanta, Georgia, and is home to more than 108,000 residents, with nearly half of them living in rental multifamily housing. While the local population is on average relatively wealthy, there is increasing pressure on housing affordability. The Housing Needs Assessment<sup>1</sup> conducted in 2020 reported the average price of homes in Sandy



Figure 1. The Crossroads' Characteristics. KSU.

Springs is \$530,000, more than twice the average of the Atlanta Metropolitan Statistical Area (\$259,000), hence making homeownership a challenge for many families. Renting is equally problematic, with a shortage of over 5,000 affordable for-rent housing. Redevelopment and renovations increased the number of units available, but resulted in an increase in rental rates of 39% between 2011 and 2018, and the loss of 1,720 reasonably priced units. This caused the displacement of residents and a deeper cost burden on those who stayed in Sandy Springs.

Older apartment complexes offer the largest proportion of naturally-occurring affordable housing. They are often paid-for investments whose owners may not be compelled to make major improvements. Outdated developments are in most cases the only option vulnerable renters, who are disproportionately members of BIPOC communities, can afford. The resulting neighborhoods might be socioculturally tightly knit, but otherwise vulnerable. This complex reality is the reason for choosing the Crossroads as the specific area of study.

The Crossroads node is one of the remaining more affordable areas of the City of Sandy Springs that encompasses a variety of land uses, with a large residential component. The 130-acre area is organized on a grid of public streets and private driveways that is interrupted by Interstate 285 (I-285) and Roswell Road, a high-traffic state route.

There are nearly 1,600 multifamily units in the Crossroads, in large majority for rent. They house a greater socio-economic diversity than that found in single-family home neighborhoods. Many older multifamily apartments are located along two transportation corridors, Northwood Drive, the main axis in the neighborhood, and Roswell Road. The garden-style apartments, built for the most part in the 1960s, have seen little change since their construction, aside from interior renovations at a few properties. The apartments and condominiums are low-rise, surrounded by surface parking or lawn with sparse trees. Long Island Creek, a tributary to the Chattahoochee River, is a perennial stream with headwaters located north of I-285. It flows in a southwestern direction through the Crossroads and dictated the development of roads and the arrangement of buildings. The confluence of the main branch and a piped tributary feeds a marshy pond at the heart of an apartment complex on the east side of Roswell Road.

There are convenience shopping opportunities along Northwood Drive catering specifically to nearby residents. However, to find some products, in particular fresh produce, residents must travel north, across Interstate 285, to a grocery store. While there is currently no park easily accessible in the Crossroads and private gathering spaces leave much to desire, the redevelopment of a parcel occupied by an obsolete building into a mini-storage facility provided the opportunity for the City to request a new park. Construction is nearing completion and the park should be delivered in the upcoming months. In the meantime, the closest park is located, as is the local school, on the north side of I-285. According to Walk Score, the rating for walking in the area ranges from 59 to 75 over 100, in part due to the City's efforts in recent years to fill in sidewalk gaps and provide streetlights. Bicycling scored much lower in the upper 20s and lower 30s<sup>2</sup>. Overall physical health is worse in the western Census tract of the Crossroads (102.12) with 11.7% of residents in poor physical condition, compared to the city average of 8.3%<sup>3</sup>. Data also reveals lower median household incomes, in the low \$60,000s, than the city's median at \$78,600, along with low health insurance rate and annual checkup rate. The Opportunity Atlas predicts that children raised in the Crossroads can expect household incomes well below the Area Median Income once adult<sup>4</sup>. Between 2018 and 2020, the crime rate for the Crossroads was comparable to that of the other densely populated areas of the city<sup>5</sup>.

The community is characterized by a concentration of LatinX families with modest to low incomes. While the LatinX account for 14% of the total population in Sandy Springs, they represent nearly 92% and 59% of all residents in the area's two main Census block groups (102.12 BG 1 and 101.13 BG 2 respectively)<sup>6</sup>. Children aged below 18 in the two Census tracts that include the Crossroads represent 24% of the population compared to 20% for the city as a whole<sup>7</sup>.



Figure 2. Long Island Creek Floodplain and Stream Corridor. KSU.

Given that Long Island Creek was a shaping factor for the configuration of the built environment in the area, and because construction occurred before many environmental regulations were adopted, the stream buffer is nonexistent in the neighborhood. Therefore the runoff from parking lots and buildings can easily contaminate the water. The first hour of stormwater runoff can have a pollution index greater than that of raw sewage, according to research<sup>8</sup>.

Some buildings are located in the floodplain and the floodway, creating a threat to personal property. Flooding occurs with significant rain events, putting at risk public health and safety, as well as aquatic ecosystems. Flooding due to increasingly strong

storms is one of the most menacing natural hazards in Sandy Springs and is especially impactful for vulnerable residents.

The presence of two major thoroughfares in the neighborhood brings concerns of noise and air pollution, another dimension studied by a team of students. Active construction associated with the reconstruction of the nearby GA-400/I-285 interchange and new elevated express lanes generates large amounts of airborne particles and trucking noise. While this situation is temporary, the expansion of the transportation system will have long-lasting impacts on an already compromised air quality.

As a subset area of study, the Highland Circle apartments were selected, since their condition is representative of those found in other complexes in the Crossroads. The complex built in 1966 consists of 18 buildings of varying sizes, with a strong north-south orientation. Clusters of buildings are organized around small green spaces that are often devoid of trees and shrubs or site furnishings. The southernmost two buildings are isolated from the rest of the development by Long Island Creek. The creek forms a natural barrier that is reinforced by fencing. Unsafe conditions were noted at Building J where the creek flows directly against the building foundations and threatens its integrity.

The Fire Marshal expressed concerns about fire risk associated with older housing structures, because of construction methods and materials that well pre-date contemporary Building Codes. The geographical analysis of fire calls between 2015 and 2019 did not reveal a higher occurrence in the Crossroads than the rest of the city<sup>9</sup>, but damages to older apartments typically burdens disproportionately lower to moderate income residents. The residents interviewed by students during site visits reported limited ventilation and natural light in some of the units, with faulty window-mounted cooling systems. The COVID-19 pandemic and the social distancing required measures by the University limited the interaction of the team with the community. It was not possible to verify the interior conditions, making the evaluation of several standards listed in the lab matrix difficult, such as the efficiency of appliances provided.

### A PLACE-BASED PROPOSAL

In the *Roswell Road Small Area Plan* adopted in 2017, the Crossroads area was examined by consultants on behalf of the City<sup>10</sup>. In the proposal, the area is redeveloped in its entirety with a mix of uses including a dominant for-sale residential component and with minimal consideration for the substantial changes for the existing low-income community and ecological challenges.

Focused on preventing displacement of current residents, the approach taken by the KSU team instead seeks holistic ways to capitalize on and improve the current setting. Prioritizing a human-centered and place-based design, students analyzed existing assets to develop proposals using low-impact sustainable strategies, responding to daily needs common to disadvantaged neighborhoods.

Analyzing over 50 precedent projects across the world, the team have distilled out four thematic lenses of study to intersect health, safety and equity to the built environment: characteristics of the ecological environment, aging housing conditions, neighborhood completeness, and air & noise pollution. Teams of students assessed the characteristics of the Crossroads, each under a different lens to map out and understand the living conditions. City staff from Planning & Zoning, Sustainability Management, Urban Design, Geographic Information System and the Fire Marshal provided data and offered insight to the students after they conducted visual surveys on site and completed data discovery. Given the early phase of the study and the level of development of proposals, this article only focuses on deteriorating infrastructure and the ecological environment theme.

In light of current climatic and non-climatic factors, the Crossroads community's resilience to flooding emerges as a dramatic concern as the risk of flooding and high intensity storms are expected to become more frequent with the changing weather patterns. Addressing the community's magnifying environmental issues such as flooding and stormwater runoff management, the teams researched and developed sustainable and nature-based design strategies for integrating the ecological improvements into the community.

As an ecological framework, the Long Island Creek corridor holds an excellent potential to create a unique sense of place. The students explored how the integration of environmental considerations into transportation, public health, and sociocultural improvements could benefit the community. The design team proposes a resilient green corridor following Long Island Creek that would showcase nature-based solutions, pocket parks, rain gardens, and public gathering places and embed various ecological services.

The stream corridor lends itself to carrying multiple functions, despite its ecological sensitivity, and takes advantage of the existing infrastructure. In a nearly built-out community like Sandy Springs, undeveloped open space is scarce. The *Trail Master Plan* illustrates the difficulty of finding space to build recreational and commuter trails<sup>11</sup>. It is a delicate balance to use the floodplain and stream buffers to support other uses than conservation, yet it remains possible. Any advanced proposal will need to carefully detail how to achieve the seemingly conflicting goals of supporting the ecosystem and providing usable space for the community.

The walkable corridor would create an authentic community identity, and enhance the living environment. The corridor could include art-based civic infrastructure and an urban agriculture network. Community gardening and local urban farming promote healthy lifestyles, nutrition literacy, social interaction, physical activity, livability and access to nutritious food options.

The green corridor would refocus the development towards the creek, transforming it from a threat into an asset. The linear park

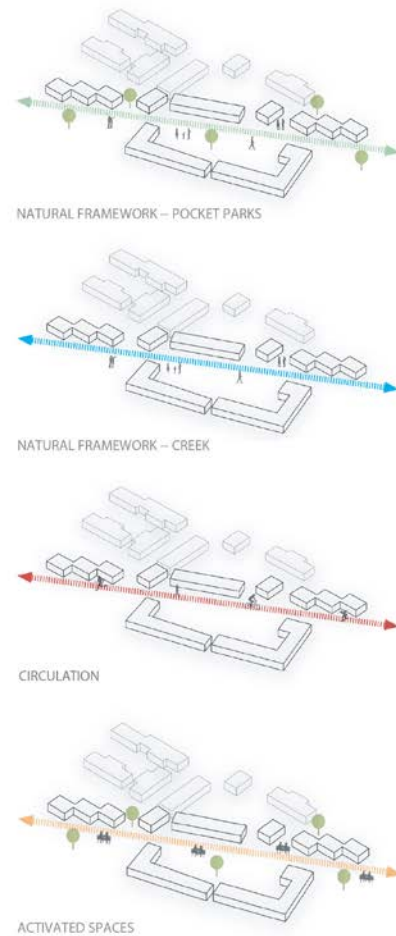


Figure 3. Long Island Creek Resilience Corridor KSU.

created by the creek, as narrow as it may be in certain areas, offers untapped opportunities for greenspace, social connections and human connections to nature. Supplementing the existing tree canopy would help mitigate urban impacts such as noise, air pollution and heat. It would create an oasis, a respite from the interstate and busy Roswell Road. Especially for children, this creates a safer exposure to nature, and allows for exploration, observation and recreation.

Green infrastructure could assist in stormwater pollution mitigation and improve the water quality in Long Island Creek which

is a known polluted waterway. Stormwater retention practices would also help mitigate flooding.

Given the speeding motorists on Roswell Road and the incomplete pedestrian and bicycle infrastructure, the corridor would create a protected alternative connection. The Crossroads experienced among the highest number of crashes in the City, all transportation modes combined, between 2015 and 2019<sup>12</sup>.

Ultimately, the project seeks to empower the community to engage and lead the decision-making process to generate sustainable and equitable solutions for the improvement of the Crossroads. As short term strategies, the team would focus on partnership empowerment by engaging existing community organizations.

### FUTURE TRAJECTORY AND SCENARIOS

The elective course was short-lived and subject to limiting factors such as students' continued involvement beyond credited activities, and funding, not including faculty teaching load. Meanwhile, the list of ideas to expand the project scope is endless, placing this project on a long-term agenda. The focus of the first phase was placed on engaging students in field investigation, despite pandemic-related restrictions. The collaboration with the City proved mutually beneficial. The lab team accessed relevant data and real-life policy insight, and provided in exchange the local government with a fresh perspective on an area that has been ignored for decades. Despite the complex matrix of authorities, policies, and funding, the research holds the potential to assist decision-makers with a deeper understanding of the neighborhood. Understandably, to generate meaningful impacts, a simple academic exercise will not be sufficient. To improve the quality of life at the Crossroads, a multifaceted approach is needed. Findings concluded that the existing conditions can be used as a foundation for improvement and that a multi-pronged and collective approach will be necessary to accelerate positive change.

Seeking a long-term dialogue and diverse partnerships, the project leaders are now exploring financial support options to further the study. The funding will support in the short term undergraduate interns, devise a community-based participation process, and implement organizational programs that promote collaboration among community members, partner organizations, policymakers, financial stakeholders, and the KSU research lab. Fostering multi-sector collaboration will be fundamental to the research and the success of the community outcome.

Funding will also support inclusive engagements in Spanish, centered on accelerating health literacy and health equity. Bringing mobile health clinics to the area for screening and health education could lift the overall well-being. This aspect of the project would be well suited for psychology, anthropology or sociology students. To ensure that programming would continue beyond the team's interventions, a nonprofit organization could take the lead. As a long term strategy, the team envisions the creation

of an organization dedicated to renters' advocacy. A grassroots group dedicated to voicing the concerns of vulnerable renters and providing them with solutions to their unique challenges could be a positive addition to the existing network of organizations in Sandy Springs.

Because of the large number of children, young adults and women currently living in the area, it is especially important to create spaces for everyone that can foster a strong and healthy understanding of "home" and "place". Across lines of race, class, and gender, therefore, this proposal holds a great potential to impact children and youth.

As a mid-term strategy, one of the deliverables could be a guidebook intended for property owners and managers to improve the housing conditions at a low cost, thus maintaining rents at low rates and offering tangible, equitable benefits to tenants. Additional efforts already underway take a particular interest in flood resilience and adaptation to climate change, to overall decrease environmental injustice. The Atlanta Regional Commission is assisting the City with the preparation of a hazard vulnerability study. A model will be created to simulate flooding and undoubtedly the Crossroads will be highlighted as a critical area. Scenarios will be run to test various approaches, including the application of nature-based solutions in the Long Island Creek corridor. The notion of Long Island Creek as a resilience corridor could be further defined by a multidisciplinary collaboration with non-profit partners and other academic disciplines, in particular with civil and environmental engineering.

In essence, collaborative pedagogical strategies for integrating community-based learning in curricular programs have been shown empowering students to "gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility"<sup>13</sup>. The Community-Based Learning has been recognized as a high-impact pedagogical practice that increases rates of student retention and student engagement<sup>14</sup>. As an undergraduate research lab, the course enriched students' learning with actively contested questions, critical thinking, problem-solving, and field-based "experiential learning" to research and creatively connect key concepts in a systematic investigation of the community. End of semester course surveys underline the students' reflections on the learning gained from the project:

*"This class pushed me to research a variety of health-related topics related to architecture that I was directly able to apply to my thesis project. These discoveries lead me to great pools of research and a world of new topics of questions that should be asked in architecture and are not currently being explored [in my courses]"*.

*"Interaction with the community professionals greatly helped me to understand the real-world value that our projects held. Receiving professional feedback was a real-life*

*opportunity to see how we could apply our research/proposals into future careers.”*

The future of the project remains unknown but nonetheless alumni of the lab advanced their understanding of the discipline, level of awareness, and engagement with external stakeholders. Our partnership underlines the classic challenges and opportunities of decoding academic research - in this case, a dense elective course - into a cross-sector collaborative mainstream platform to catalyze the emergence of a more resilient, sustainable, equitable and healthy community.

## ACKNOWLEDGEMENTS

The authors are grateful of the following for their expertise and support throughout the study: Kennesaw State University Office of Government Relations, Office of Research, and Department of Architecture; City of Sandy Spring staff from Planning & Zoning, Sustainability Management, Urban Design, Geographic Information System, and Fire Marshal.

Special thanks to the *Design for Health* lab students and the continued excellent efforts of volunteer students and alumna Azha Parker, Reesa Winters, and Chomzy Ezeobi.

---

## ENDNOTES

1. City of Sandy Springs, *Sandy Springs Housing Needs Assessment*, HR&A. 2020. Online, <https://up.sandyspringsga.gov/sites/default/files/2021-06/SandySpringsHousingNeedsAssessment%20Final%20Report.pdf> (accessed August 2021).
2. Walk Score. Online, [https://www.walkscore.com/GA/Sandy\\_Springs](https://www.walkscore.com/GA/Sandy_Springs) (accessed April 2021).
3. Center for Disease Control and Prevention, “PLACES: Local Data for Better Health”. Online, <https://experience.arcgis.com/experience/22c7182a162d45788dd52a2362f8ed65> (accessed September 2021).
4. Opportunity Insights, “Opportunity Atlas.” Online, <https://www.opportunityatlas.org/> (accessed May 2021).
5. City of Sandy Spring Police Department. 2020. Crime data heat map, 2018-2020. Unpublished data.
6. U.S. Census Bureau; American Community Survey. 2019: *ACS 5-Year Estimates Detailed Tables. Table B03003, Hispanic or Latino Origin*.
7. U.S. Census Bureau; American Community Survey. 2019: *ACS 5-Year Estimates Subject Tables. Table S0101, Age and Sex*.
8. Campbell, Craig S. and Michael H. Ogden, *Constructed Wetlands in the Sustainable Landscape*. New York: John Wiley & Sons, Inc., 1999.
9. City of Sandy Spring Fire Department. 2020. Fire responses data distribution map, 2015-2019. Unpublished data.
10. City of Sandy Springs, *Roswell Road Small Area Plan*, Rhodeside & Harwell. 2017. Online, [https://up.sandyspringsga.gov/sites/default/files/2021-06/20170207RoswellRoadPlan\\_Fo.pdf](https://up.sandyspringsga.gov/sites/default/files/2021-06/20170207RoswellRoadPlan_Fo.pdf) (accessed May 2021).
11. City of Sandy Springs, *Trail Master Plan*, PATH Foundation and Kaizen Collaborative. 2019. Online, <https://up.sandyspringsga.gov/sites/default/files/2021-06/SandySpringsTrailMasterPla.pdf> (accessed October 2021).
12. City of Sandy Springs, *2021 Transportation Master Plan*, Kimley-Horn. 2021. Online, <https://up.sandyspringsga.gov/sites/default/files/2021-06/2021%20Transportation%20Master%20Plan.pdf> (accessed August 2021).
13. Bringle, Robert G. and Julie A. Hatcher, “Implementing Service Learning in Higher Education”, *The Journal of Higher Education*, Vol. 67, No. 2 (March/April 1996): 221-239.
14. Kuh, George D. *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. Washington, DC: Association of American Colleges and Universities, 2008.